

Queensland's burrowing bettongs...

where old news is gut news

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ABSTRACT

The Burrowing Bettong *Bettongia lesueur* (Quoy and Gaimard 1824) has not previously been recorded from Queensland, although its past presence in all other mainland Australian states (excluding Victoria) is well documented. New evidence linking 11 old unregistered Queensland Museum study skins to 13 incorrectly identified skulls, and archival correspondence relating to an 1885 collection trip, made by museum collector Kendall Broadbent to Charleville, confirms that Burrowing Bettongs were once a part of Queensland's marsupial fauna. While old burrows attributable to *B. lesueur* are not uncommon in south-western Queensland, unconfirmed reports from the mid 1990s of "football-sized wallabies bouncing off the dingo fence" by kangaroo shooters operating there, throw the 1885 records into a modern context worthy of investigation.

Key words: extinct marsupials, *Bettongia lesueur*, medium-sized mammals, historic records, Kendall Broadbent, field collection, Queensland Museum.

Introduction

Have you ever looked at a sad museum specimen and wondered how much the *taxidermist* was suffering at the time the animal was having cotton-wool rammed up its back passage? Have you considered that mounted animals might reflect the condition of their stuffers much like pets resemble their owners? Well here is proof.

By far, the saddest looking specimens in the Queensland Museum belong to a little troop of 11 pathetic wallabies that have always skulked in a dark drawer reserved for the mammal section's most unexplained freaks. They are old and fragile, most have lost their tails and one or two limbs, they are without registration numbers, they all lack information on collection locality as well as on collectors and dates. In fact, so horrible-looking and unforthcoming are these lumpy, contorted things that I am staggered they have lasted through the various 'clean-ups' dealt out by more heavy-handed curators over the decades (Fig. 1).

But, new evidence linking the old skins to some old, incorrectly identified skulls, along with some archival registration cards and correspondence relating to an 1885 museum field trip to Charleville, confirms that the tacky skins are all Burrowing Bettongs *Bettongia lesueur*. Now presumed extinct on the mainland, these would be the only specimens of *B. lesueur* ever collected from Queensland.

On top of this though, it is now clear that the poor condition of the skins mirrors the frustrated condition of the skinner who, while flunking on quality control, laboured on to leave us with what can now be acknowledged as some of the most priceless treasures in the Queensland Museum's mammal collection.

What follows is the story of the trail of evidence that led to the identification of both the bloated skins and the dyspeptic collector who stuffed them.

The Skins

Of all the 11 sad bettong skins, only one had been carefully prepared; lovingly stitched, firmly stuffed and stretched to dry. The remaining 10 looked like varicosed chorizos, their hind legs bound with coarse string, the pads of their forepaws and hind feet cut open but not stitched, their tails (those that remained) zigzagged because no wire reinforcement had been used to keep them straight, the bodies and heads stuffed without an internal framework, leaving them lumpy and contorted.

All the skins carried a small wood veneer tag on one of their hind legs. The words '*Bettongia gaimardi*' (Tasmanian Bettong) and a letter in lower case were written in pencil on each tag. The tags were attached with a kind of string different to that which bound the hind feet, suggesting that they had been added back at the museum. This is supported by the hand writing on the tags which is that of Charles De Vis, then Curator of the Queensland Museum. Lower case letters ran from 'a' to 'i' (the letter 'b' is repeated once!). On the reverse side of the specimen 'a' label, the words '*Bettongia leseueri* b' has been vigorously crossed out (Fig. 2).

One of the 'b' specimens (a female) still retained a skull that on extraction was clearly identifiable as *B. lesueur* (no other bettong can match the huge, balloon-like ear bones (auditory bullae) and long permanent premolars of Burrowing Bettongs) (Fig. 3).

The Skulls

A few things about that single extracted skull (its badly smashed bullae and perforated palate) smacked of an old damaged series of registered, but dubiously provenanced bettong skulls that had been in one of our drawers for

as long as I had been at the museum...around 30 years. Most of them also had smashed ear bones and ripped-out palates. In the worst specimen, all that remained of the skull were the upper teeth and snout. Still, all the skulls could be indisputably identified as Burrowing Bettongs (Fig. 4).

These skulls had clearly caused a great deal of curatorial grief down through the decades. Eight of them had been registered in 1938 as *Bettongia gaimardi* (Tasmanian Bettong), the ninth had been registered in 1981 as *Bettongia* sp. (i.e. an unknown species of bettong), and all nine skulls were recorded in the collection register as coming from the same locality 'Coastal N.S.W.'! However, the paper label accompanying each skull carried a '?' before 'N.S.W.' and the '?' appears to have been squeezed into the label notation some time after the original labelling was completed. The 10th skull was registered as *Bettongia* sp. (1981) with no associated data. The 11th as *Bettongia lesueur* (1986), the 12th (1987) I found in a drawer with the Rufous Bettongs *Aepyprymnus rufescens*, and the 13th skull was extracted by me from the one old skin in the series still to carry a skull inside it (Fig. 11).

Something in the ham-fisted way the skulls had been prepared smacked of a collector who specialised mainly in birds. This is not meant to sound uncharitable, but in order to prepare a museum bird skin, the brain is usually removed through a large hole smashed in the back of the skull, and then the beak and the rest of the skull is left in place to give the bird's its characteristic head shape. If he were a mammalogist he would have treated the skulls and teeth more like holy relicts knowing that in them lie the keys to the animal's identity.

By now there were two good clues to run with:

- 1) The ravaged condition of the Burrowing Bettong skull extracted from one of the skins suggested that all the rough *B. lesueur* skulls and skins belonged together.
- 2) There was a good chance that the collector was primarily a bird preparator.

The De Vis Mammal Index Cards

In the past, some difficult curatorial problems relating to the origin of a number of old specimens had been solved by referring to an invaluable collection of 300 - or so old cataloguing cards written up by Charles De Vis who was the Queensland Museum 'Curator' between 1882 and 1905. Under his heading "gaimardi" one of those old brown cards showed that sometime in October around 1885 or 1886 (the ink is smudged) nine bettongs had been collected from Charleville in central southern Queensland. On another card, headed 'leseueri' (sic) is listed one specimen from Charleville, collected in October 1886, but the entire entry had been crossed out by the same pen that had made the entry (the letter 'b' on this specimen accounted for the repeated 'b' mentioned earlier). The initials K.B. were associated with both cards and represented the collector (Fig. 12 and Fig. 13).

K.B.

Strangely enough, this was the easiest riddle to solve. K.B. referred to Kendall Broadbent, the Museum's official collector between 1882 and 1893 (thereafter, in his old age, employed at the Museum as an attendant from 1893-1911) (Fig. 9). A short, wiry man of intrepid spirit, the discovery of his initials on the card meant the confirmation of the two earlier hunches....Broadbent certainly was more of a bird collector than a mammal stuffer; and, surprise, surprise, there were enough skulls of his in the mammal collection to confirm that when it came to preparing skulls, he was all thumbs. So far, however, we had no evidence that Broadbent had ever been to Charleville in 1886. The archival correspondence showed nothing for that year. But a slow look through the bird literature of 1886 showed that in the *Proceedings of the Royal Society of Queensland* 3:23-31, Broadbent had written a nine-page list of birds he had collected in Charleville the year before (1885) '...the latter part of August and throughout the two succeeding months...' (p.23). Unfortunately he said nothing in that publication about collecting any small wallabies on that trip. Some further digging through the files, however, showed that in Appendix IV ('Summary of Collections') of the Queensland Museum Report of the Board of Trustees for the Year 1885 (printed in 1886), Mr K. Broadbent is recorded as having collected 313 birds and 24 mammals (20 skins, 2 skeletons, 2 skulls) from Charleville!

Old Correspondence

But by far, the greatest breakthrough in this paper chase came in the form of Kendall Broadbent's own handwriting. Although he made a series of field diaries and eventually deposited them in the Queensland Museum library, I could find no diary for the 1885 Charleville trip. In the absence of diaries, however, the next best thing to look though was the archival correspondence for 1885. There, in 'Correspondence In' I found four letters sent by Broadbent (in the field) to Charles De Vis (in Brisbane), mentioning not only over 300 birds he had shot and stuffed but also notes on a strange burrowing animal he wanted to trap (Fig.10).

Some extracts from those four crucial letters are printed (word for word, with original underlining and grammatical errors) below.

Charleville August 29th 1885.

"I have the honour to report, arrived here all safe, and got to work....The country here is a desert no grass, not a blade, and the water in the river drying up fast, you can walk for miles in the bed of the river. The animal that burrows in the sand ridges, is not a wombat, by his tracks, it appears to be a sort of [sketch of hind foot here] Kangaroo rat, but no one here appears to have caught one, or seen one. I have only one good trap would you please send me up 6 more traps, common gin trap's large enough to catch a Kangaroo rat. Mr Spalding would pick the best. I want them to set in the mouth of their holes. There are red Kangaroos here but very shy. I have got one spec. If you please send the traps Cobb & Co would

be the quickest way to send them 2 days from Brisbane, please pay for them. This is a very expensive place to live in double to what it is in Brisbane. I have the honour to remain Your Obedient Servant Kendall Broadbent."

Charleville September 22nd 1885.

"I have the honour to report. I have up to date, 3 spec of red Kangaroos, 1 *Macropus Major*. Four specimens of that burrowing animal new I think, 150 spec of birds."

Charleville October 12th 1885

"I have the honour to send you. Three boxes, and one cask of specimens of Natural History, containing the following. Number one box, contains 164 specimens of birds, and 2 skins of that new animal that burrows in the sand ridges..."

Charleville October 22nd 1885

"I have the honour to send you the balance of collection of Birds, Animals, Lizards etc, collected at or near Charleville on the River Warrego, During the months Aug, Sept, Oct 1885. No 5 Box, containing, 1 Emu skin....4 Burrowing animals, and one Nailtailed wallaby..."

That made a total of 14 'kangaroo rats' sent back to De Vis. Fortunately, in an innocent confirmation of the species' identity, in every letter Broadbent mentioned the word "burrowing" in reference to the 'new' 'kangaroo rat'. No Australian bettong other than *Bettongia lesueur* is known to burrow, and it is drawing too long a bow to suggest that Broadbent, with his prior experience with bandicoot collection (see Broadbent's diaries, Queensland Museum Library) could have had mistaken Bilbies *Macrotis lagotis* for bettongs. So now it was clear that Broadbent had collected 14 Burrowing Bettongs in the spring of 1885 from Charleville, but there was no real way of proving that the rough Queensland Museum specimens were actually the same animals, after all, every museum was madly engaged in swapping and gap-filling in those days, the skins could have come from anywhere...even elsewhere in Queensland!

Confirmation

The answer to this vexing question finally came when I was checking Broadbent's claim to have collected a Bridled Nailtail Wallaby *Onychogalea fraenata* at Charleville (mentioned in his letters dated Oct 12th and 22nd 1885). Luckily we still had the specimen in our collection (its skin and skull had been just as roughly prepared!) but it had never been properly stitched up, so it was possible to see right inside the gaping hole in its gut (Fig. 5 and Fig. 6). Now normally inside a specimen you would expect to see cotton-wool or tow (teased hemp fibres) or coconut fibre, but the insides of this wallaby defied explanation...gum leaves, grass, bedding straw, sticks, emu feathers and wool dags! Had Broadbent also discovered some exciting new herbs in the sand hills of Charleville? What was wrong with him?

The answer was there in one of those four letters...he was hot and bothered (September 22 1885 "...Lizards scarce or none, beetles none, all dead on account of the dry weather. Very little water left in the river and drying up fast. Cattle and horses dreadful all bones, no grass not a blade to be seen...) and, most significantly, he was running out of the material he needed to stuff the specimens he collected ("...I shall have finished all my material for collecting about the beginning of next month, alum I have none left, shall have to get a few pounds...I think with care, I can make my cartrages last until about the 12th of next month. I have the honour..."). As he had predicted, next month they had been exhausted (October 22nd 1885, "...I have used up all Powder Shot, and all my collection material, and am consequently doing nothing. I think I have sent you specimens of everything to be got in this district during the present dry time, in a good season and a few months earlier, this would be a good collecting country. I have the honour....")

With nothing else to use, he had stuffed his mammals with whatever was at hand. (Goodness knows if Broadbent was wearing underpants on his return trip) He had no wires to frame-up the skins, no string or cotton to stitch them, no way to straighten them out and dry them, nothing to give them the form you would expect in a decent museum study specimen.

So, armed with this tragic snippet, I headed for the old lumpy Bettongs hoping their insides might fill in the story. And I wasn't disappointed; in fact, nothing could have thrown more significant light onto the subject than what I found. I chose one skin at random, extended the small slit on its belly and started pulling the stuffing out with a pair of long forceps. First there was some cotton-wool, then, all scrunched up, the waxy blue paper cotton-wool always used to be sold in, then more blue wrapper bound around the animal's thigh bones to give them some bulk, some string and coarse tow, then finally wads of crumpled pieces of newspaper (Fig. 7).

Newspaper! I closed my eyes and pledged the rest of my life to celibacy and bible translation if what I wanted was there in print. I grabbed at the first crumpled ball with that great light-headed feeling you get when you know you are about to be a part in either a great discovery or a crushing coronary. I could hardly hold the forceps steady enough to pull the wads out without squeezing them into confetti. Ball after ball I gingerly smoothed out, reading announcements like..."To new arrivals, Why pay rent, 90 pounds will buy a new cottage, 3 rooms, ceiled, with tank etc easy terms..." and wanted ads for cooks and laundresses at "...12-15 shillings per week, Mrs Mack, Registry Office, Anne St near Convent, off Petrie's Bight. No charge to female servants". Petrie Bight at the top of Queen St...this was a Brisbane newspaper.

And then, finally the bits I had been praying for came together to read... "Telegraph, ...Daily Newspaper in the Colony...EVENING, AUGUST 20, 1885 [PRICE ONE PENNY]" (Fig. 8).

August 20 was about a week before Broadbent arrived in Charleville, so the newspaper he had scrunched up and used as wadding was either something he took with him,

or something he had read on the Cobb and Co. coach he had travelled in from Brisbane, or simply what was available at Charleville at the time. It doesn't matter, it establishes beyond reasonable doubt that the dreadful looking Burrowing Bettongs in the Queensland Museum were collected by Kendall Broadbent suffering from a lack of material to ply his trade. Thanks to this poor man's dilemma with what to shove inside carcasses, we now know that Burrowing Bettongs were once a relatively recent part of Queensland's marsupial fauna.

Queensland Bettongs Today

"Hello" you say. "That's not really earth shattering news, until a century ago they had been recorded from every other mainland State (excluding Victoria); they were bound to have slipped over into Queensland somewhere". And that is a fair comment, in fact, their presence in Queensland had long been suspected. For over a decade CSIRO ecologist Jim Noble has been discussing the ecological effects of the Burrowing Bettong's disappearance from Australia's mulga rangelands. His inclusion of Queensland in the scenario was always solidly based on the occurrence of bettong burrows documented from many parts of far south-west Queensland (Noble 1995; Noble *et al.* 2001).

So, in many respects, the discovery that Burrowing Bettongs occurred in Queensland at least up until 1885, really just tells the same sad old extinction story every other mainland

State can reluctantly tell (Short and Turner 1993; Short 1998), except for one additional thing. In 1996 Sergeant John O'Shea (then of Law Enforcement, Queensland Department of Environment and Heritage) reported to me that a kangaroo shooter who, in the process of being charged for a misdemeanour, had recounted seeing '*football-sized wallabies*' emerge from burrows on a far south-western Queensland station. Later, in a conversation with the shooter, he told me that the station manager had also seen "...two at the bottom of a stony drop half a mile west of the homestead at No 5 Bore, about five years ago" and his son had seen one "in bluebush, five mile from the house". Later, the manager confirmed seeing "small wallabies bouncing off the dingo fence" while mustering.

Sadly, and perhaps predictably, two recent surveys conducted by us in that drought ravaged and ultragrazed corner of the State (Fig. 14) left us with no warm inner glow about bettongs still holding on in the southwest. In spite of the hundreds of huge, defunct siltstone burrow complexes we found in just about every second gravely jump-up (escarpment) (Fig. 15), all the evidence, from the pulverised understorey, the dead mulga, the foxes, and the pillions of sheep and cattle droppings left us wondering that we were maybe 10...but probably 100 years too late!

So little satisfaction from a long trail of clues...an animal extinct before it's discovered...but in this case how appropriate to be left with such an empty feeling in the pit of one's stomach.

Acknowledgements

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FIGURES



Figure 1. The eleven unregistered *Bettongia* skins that inspired speculation about Burrowing Bettongs in Queensland.

Photo: Bruce Cowell.



Figure 2. Example of original wood veneer labelling and '*Bettongia gaimardi*' pencilled on one specimen.

Photo: Bruce Cowell.



Figure 3. *Bettongia lesueur* skull extracted from skin 'b'.

Photo: Bruce Cowell.



Figure 4. The thirteen unprovenanced *B. lesueur* skulls found in the Queensland Museum.

Photo: Bruce Cowell.

FIGURES



Figure 5. Bridled Nailtail Wallaby *Onychogalea fraenata* collected by Kendall Broadbent at Charleville in 1885, with a sample of its stuffing extracted.

Photo: Bruce Cowell.



Figure 6. Close-up of stuffing materials used in *O. fraenata*.

Photo: Bruce Cowell.



Figure 7. Diversity of stuffing material exposed from one of the 11 Burrowing Bettong skins.

Photo: Steve Van Dyck.



Figure 8. Reassembled newspaper fragments from bettong stuffing.

Photo: Steve Van Dyck.



The ageing and much-loved Kendall Broadbent.

Figure 9. Kendall Broadbent, Queensland Museum collector 1882-1893.

Photo: Queensland Museum.

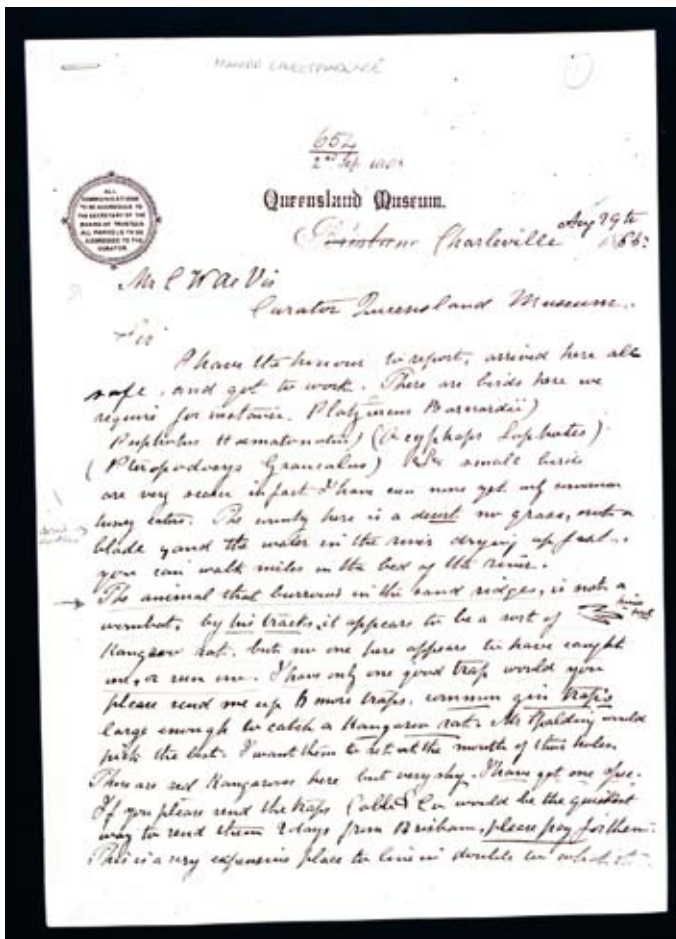


Figure 10. Letter sent from Charleville by Kendall Broadbent to his superior, Charles De Vis, August 1885.

Photo: Bruce Cowell.

This is a handwritten table with multiple columns. The first column contains numbers (e.g., 10074, 10075, 10076). The second column contains names of individuals (e.g., G. G. G., G. G. G.). The third column contains dates (e.g., 10/10/38, 11/10/38). The fourth column contains locations (e.g., Coastal N.S.W., Charleville). The fifth column contains other details (e.g., 10074, 10075, 10076). The table is organized into rows, each representing a different specimen or individual.

Figure 11. Extract from the 1938 registration of the *B. lesueur* skulls as *Bettongia gaimardi* from 'coastal N.S.W'.

Photo: Bruce Cowell.

This is a handwritten card with the title 'gaimardi Devis' and 'Marbupialia'. It lists nine specimens, each with a letter (a-i) and a description (e.g., 'ad ♂', 'ad ♀', 'juv ♀'). The card is organized into columns, with the first column containing the letters and the second column containing the descriptions. The card is dated 'KB 11/10/38'.

Figure 12. One of De Vis' catalogue cards detailing the accessioning of nine 'gaimardi' specimens, collected by KB from Charleville.

Photo: Bruce Cowell.

This is a handwritten card with the title 'leseueri Devis' and 'Marbupialia'. It lists one specimen, 'a ad ♂', with a description 'West Australia, Nelt'. The card is organized into columns, with the first column containing the letter and the second column containing the description. The card is dated 'K.B. 11/10/38'.

Figure 13. Another of De Vis' catalogue cards showing the accessioning of a specimen of 'leseueri', collected by "K.B." from Charleville.

Photo: Bruce Cowell.

FIGURES



Figure 14. South-western Queensland mulga community (in the vicinity of extinct bettong burrows) under extreme stress from drought and grazing (2003).

Photo: Steve Van Dyck.



Figure 15. One of many burrow complexes attributed by me to *B. lesueur* on Moombidary Station, south-western Queensland. In contrast to Bilby burrows these defunct 'bettong complexes' were often up to 40 m across with as many as 50 entrances.

Photo: Steve Van Dyck.